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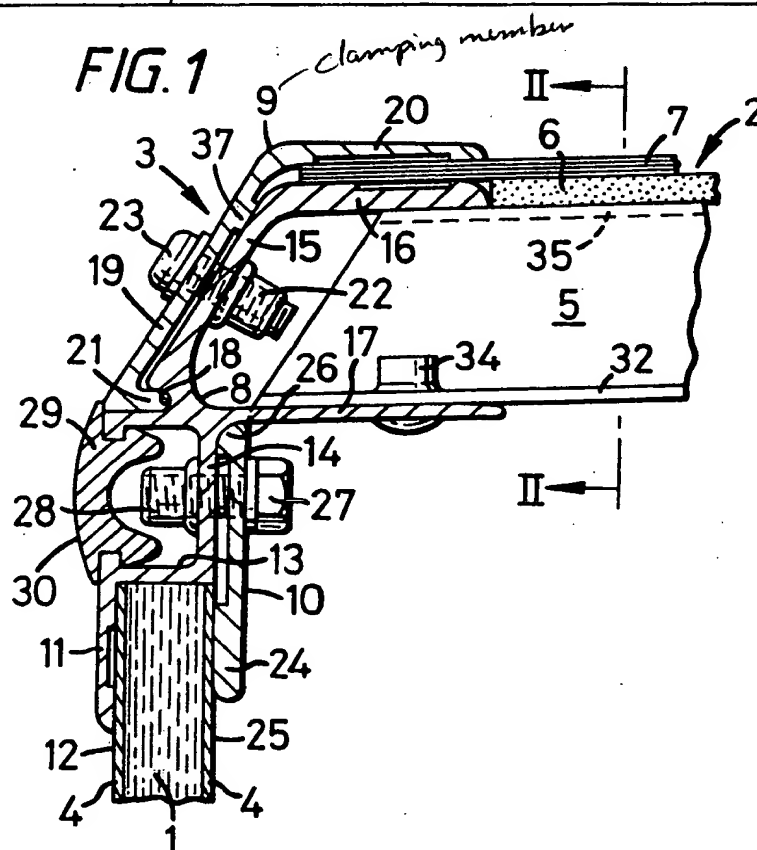
E1D

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## (54) Box structure

(57) A box structure having at least three walls and a roof comprising an extruded edging member 8 secured to and extending around the upper edges of the walls, the member having a wall portion 14, 15 above the walls and a roof panel supporting platform 17 extending inwardly of the portion, a separate extruded clamping member 9 pivotable externally of the edging member and having a lip 20 to engage over the edge of a roof panel 5 supported on the platform 17, releasable fastening means being provided to secure the member to the wall portion and urge the lip towards the platform to clamp the edge of the roof panel therebetween. The structure may be used as a vehicle body, caravan, building shell, or storage container.



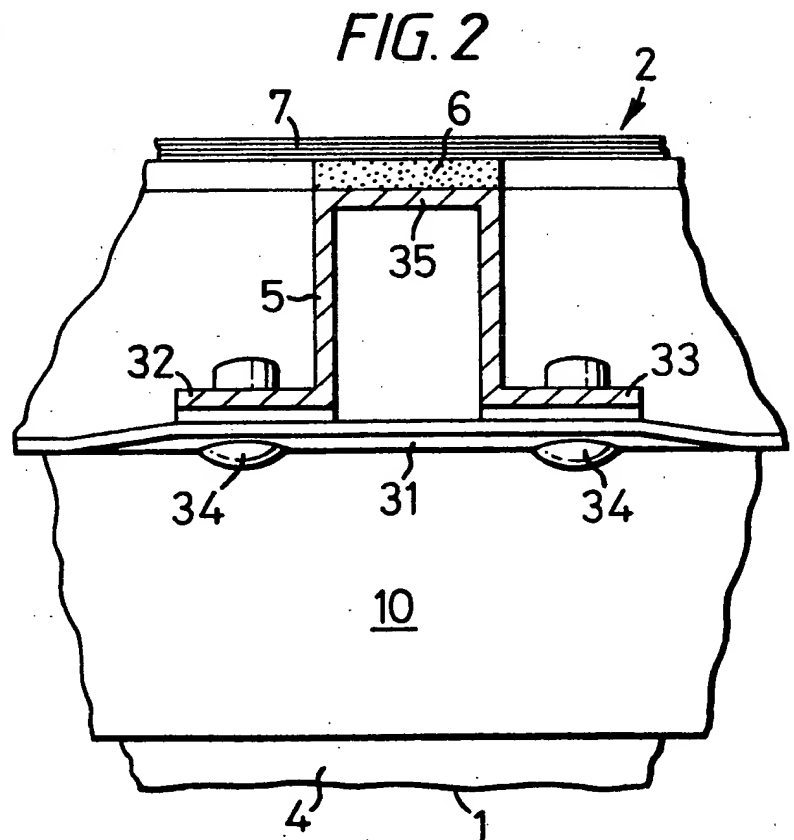
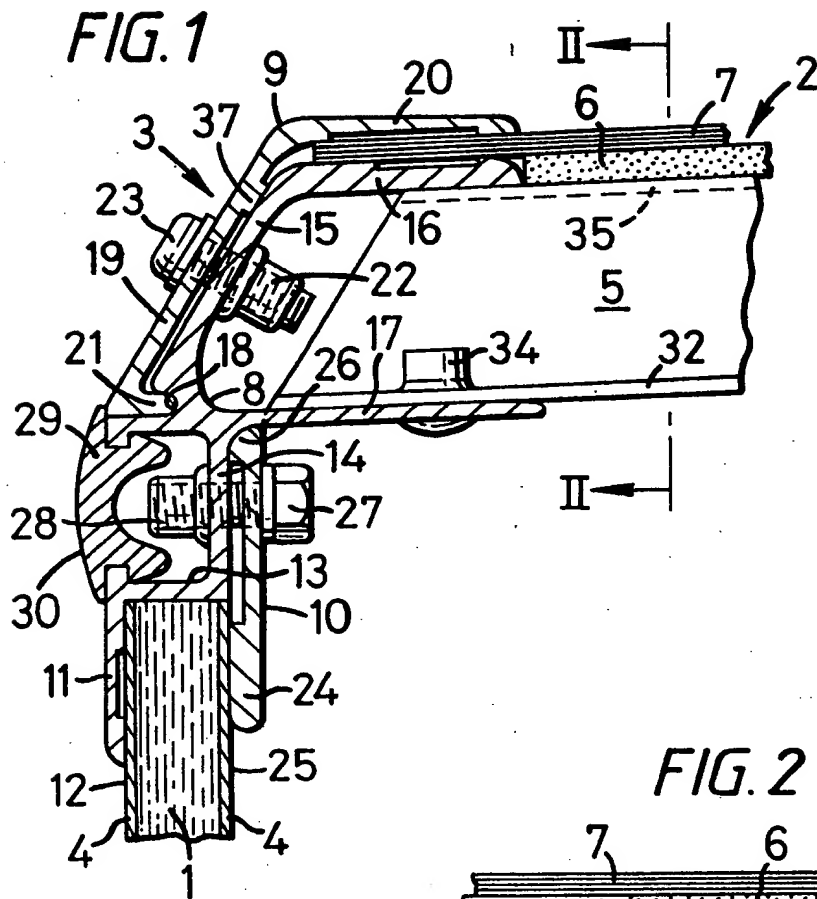
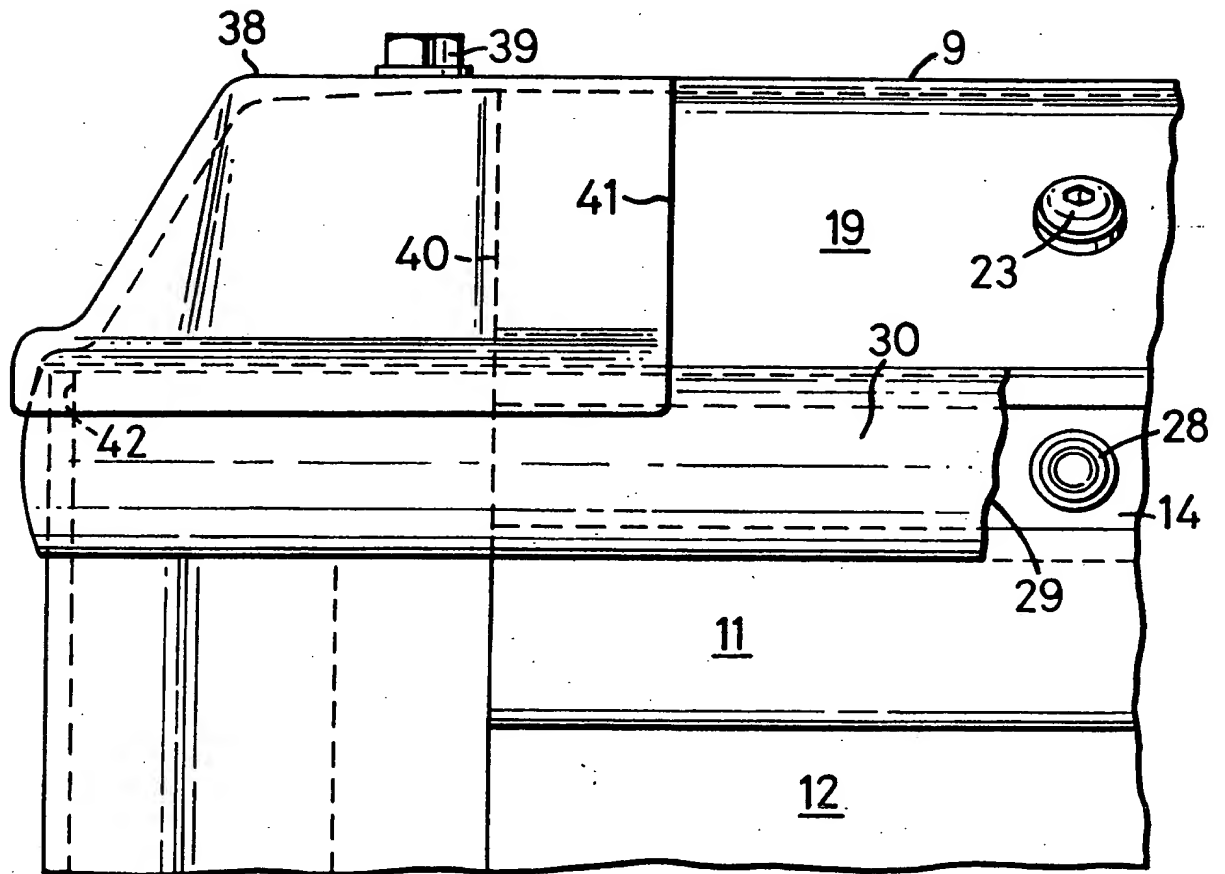


FIG. 3



## SPECIFICATION

### Box structure

5 This invention relates to box structures suitable for use as vehicle bodies, caravans, both portable and permanent building shells and other storage containers.

Conventionally vehicle bodies have roof panels that are rivetted at their edges to frame members extending around the upper edges of the walls of the bodies. The panels may be metallic and opaque but recently it has become commonplace to use translucent panels of a plastics material such as resin bonded glass fibres. In a typical vehicle body roof, a large number of closely spaced rivets are necessary all passing through the upper surface of the roof. This involves considerable labour during construction and furthermore, in use, torsional strains in the body tend to loosen the rivets so that the roof leaks. Replacement of damaged panels also involves drilling out the rivets and replacing them, a labour intensive operation.

It is therefore an object of the present invention to provide an improved box structure having a roof panel that can be quickly installed and replaced and does not need any fasteners passing through it.

According to the present invention there is provided a box structure having at least three walls and a roof comprising an extruded edging member secured to and extending around the upper edges of the walls, the member having a wall portion above the walls and a roof panel supporting platform extending inwardly of the portion, a separate extruded clamping member pivotable externally of the edging member and having a lip to engage over the edge of a roof panel supported on the platform, releasable fastening means being provided to secure the member to the wall portion and urge the lip towards the platform to clamp the edge of the roof panel therebetween.

The member may have a further inwardly extending cantrail to receive and support roof sticks for the panel. Preferably the member is clamped around the upper edges of wall panels and secured by releasable fasteners accessible from inside the box structure.

The fastening means and the fasteners may extend within external recesses in the edging member and the clamping member and removable cover strips may be provided for the recesses to enable the roof panel and the walls to merge together with a smooth substantially unbroken surface.

At each corner of the roof of the box structure a casting may be provided to bridge adjoining edging members. Preferably the edges of the casting merge smoothly with adjacent clamping members. The casting may be formed with a lower lip to overlap the walls

of the structure and is preferably secured to a corner post disposed between adjoining walls of the structure.

One embodiment of the invention will now be described by way of example with reference to the accompanying drawing, in which:-

Figure 1 is a transverse section through an upper side edge of a vehicle body;

Figure 2 is a section on the line II-II of Fig. 1; and

Figure 3 is an end elevation of an upper corner of the vehicle body.

Referring to Figs. 1 and 2 the upper side edge of a vehicle body comprises a side panel 1 and a roof structure 2 joined by an extruded edging member 3. The panel 1 is of known composite formation and may be faced with glass painted aluminium sheets 4 bonded to the core of the formation. The roof structure 2 comprises a number of spaced apart roof sticks 5 capped with strips of double sided adhesive tape 6 and a translucent roof panel 7 of glass fibre.

The edging member 3 comprises a base 8 and clamping members 9 and 10 all extruded from a suitable aluminium alloy. The base 8 has a limb 11 to engage the outer surface 12 of the panel 1, a recessed part 13 having an inner wall 14 and an inclined wall portion 15 with an inwardly directed platform 16 at its upper end and a cantrail 17 at its lower end. At its lower end the wall portion 15 is formed externally with a recess 18. The clamping member 9 has a base 19 with an inwardly directed lip 20 at its upper end to cooperate with the platform 16 and a part 21 at its lower end to engage within the recess 18 and enable the clamping member 9 to pivot relative to the base 8. The wall portion 15 is drilled at intervals along its length and rivetted nuts 22 are secured thereto to be engaged by bolts 23 passing through the base 19. The clamping member 10 has a limb 24 to engage the inner surface 25 of the panel 1, its upper end 26 acts as a fulcrum against the base 8 and it is held by bolts 27 engaging in rivetted nuts 28 secured in apertures in the inner wall 14 to clamp the side panel 1 between the limbs 11 and 24. The recessed part 13 is closed by an extruded strip 29 of plastics material having an outer surface 30 merging generally smoothly with the outer surfaces of the limb 11 and base 19.

As shown at 31 in Fig. 2 the cantrail 17 is angled upwardly at intervals along its length to receive the roof sticks 5. The latter are of "top-hat" formation in section having flanges 32 and 33 secured to the cantrail 17 by rivets 34. A base wall 35 of the sticks is a clearance fit below the platform 16 and the sticks are bowed from one side of the vehicle body to the other. The double sided, compressible, sticky tape 6 is disposed on the base wall 35 and the roof panel rests on this tape with its edges resting on the platform 16 beneath the

lip 20.

On assembly, the roof panel 7 is disposed as described above and pressed down along the roof sticks to engage firmly with and adhere to the double sided tape 6. The bolts 23 are then tightened to clamp the edges of the panel firmly in place. The bowed sticks ensure that the roof panel is maintained under slight tension so increasing the rigidity of the roof structure. Longitudinal ribs 37 limit the extent of movement between the lip 20 and platform 16 but these ribs may be omitted to increase the clamping force applied to the edges of the roof panel 7. It will be understood that both the base 19 and the wall portion 15 could be recessed and the recess externally closed by a plastics strip similar to the strip 29.

At the corners of the vehicle body a casting 38 (Fig. 3) is provided to join two sets of edging members. The casting is bolted at 39 to an inner casting (not shown) secured to a corner post (not shown). It will be understood that other fixings for the casting 38, passing through its side walls, could be used. As shown in Fig. 3 the bases 8 extend within the casting 38 terminating at a position shown by a chain line 40 but the clamping members 9 terminate at 41 to merge smoothly with the outer surface of the casting. At its lower edge the casting 38 is formed with a lip 42 to overlap the walls of the body.

Although described above in connection with a vehicle body it will be understood that the box structure of the present invention could be used for caravans, portable and permanent building shells and storage containers.

#### CLAIMS

1. A box structure having at least three walls and a roof comprising an extruded edging member secured to and extending around the upper edges of the walls, the member having a wall portion above the walls and a roof panel supporting platform extending inwardly of the portion, a separate extruded clamping member pivotable externally of the edging member and having a lip to engage over the edge of a roof panel supported on the platform, releasable fastening means being provided to secure the member to the wall portion and urge the lip towards the platform to clamp the edge of the roof panel therebetween.

2. A box structure according to claim 1, in which the member has a further inwardly extending cantrail to receive and support roof sticks for the panel.

3. A box structure according to claim 1 or claim 2, in which the member is clamped around the upper edges of wall panels and secured by releasable fasteners accessible from inside the box structure.

4. A box structure according to claim 3, in which the fastening means and the fasteners may extend within external recesses in the

edging member and the clamping member and removable cover strips are provided for the recesses to enable the roof panel and the walls to merge together with a smooth substantially unbroken surface.

5. A box structure according to any one of the preceding claims, in which a casting is provided to bridge adjoining edging members.

6. A box structure according to claim 5, in which the edges of the casting merge smoothly with adjacent clamping members.

7. A box structure according to claim 5 or claim 6, in which the casting is formed with a lower lip to overlap the walls of the structure.

8. A box structure substantially as herein described with reference to Figs. 1, 2 and 3 of the accompanying drawing.

#### CLAIMS

Amendments to the claims have been filed, and have the following effect:—

Claims 8 above have been deleted or textually amended.

New or textually amended claims have been filed as follows:—

8. A box structure according to any one of the preceding claims constituting a vehicle body.

9. An extruded edging member to be clamped to first and second panels disposed at an angle to one another comprising a wall portion to extend beyond the edge of the first panel, a supporting platform for the second panel extending laterally from the wall portion, a separate extruded clamping member pivotable on the side of the wall portion remote from the platform and having a lip to engage over the edge of the second panel when the latter is supported on the platform and releasable fastening means to secure the member to the wall portion and urge the lip towards the platform.

10. An extruded edging member according to claim 9 in which the member has a cantrail extending laterally from the wall portion on the same side thereof as the platform.

11. A pair of extruded edging members according to claim 9 or claim 10 disposed at an angle to one another and having their ends bridged by a casting the edges of which merge smoothly with adjacent clamping members.

12. A pair of edging members according to claim 11 in which the casting is formed with a lower lip to overlap the first panel.

13. A kit of parts for joining panels together comprising edging members and castings according to claims 9 to 12.

14. A kit of parts according to claim 13 together with panels to constitute walls and a roof for use in making a box structure according to any one of claims 1 to 8.

15. A box structure substantially as herein described with reference to Figs. 1, 2 and 3 of the accompanying drawing.

16. An extruded edging member substantially as herein described with reference to Figs. 1, 2 and 3 of the accompanying drawings.
- 5 17. A kit of parts according to claim 13 or claim 14 and substantially as herein described.

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